

What we claim is:

1. A cable modem system comprising:

a cable modem termination system for connecting a CATV center to a CATV transmission line,

5 a cable modem for connecting each subscriber terminal to the CATV transmission line, and

a DHCP server for dynamically allocating an IP address to the subscriber terminal by transmitting/receiving DHCP messages to/from the subscriber terminal through the cable modem,

10 the cable modem termination system having a DHCP server address notifying portion for notifying the cable modem of a DHCP server address, and

the cable modem having a DHCP relay agent for relaying the DHCP messages as a relay agent, an IP address detector for detecting the IP address from the DHCP message, an IP address storage for storing the IP address, and a packet filtering portion for discarding a packet having a source IP address other than the IP address stored in the IP address storage when the packet is received from the subscriber terminal.

20 2. The cable modem system as claimed in claim 1 wherein if the subscriber terminal is in a state where an IP address is unallocated by the DHCP server, the packet filtering portion discards a packet having the source IP address other than a predetermined initial IP address when the packet is received from the subscriber terminal.

25 3. The cable modem system as claimed in claim 1 wherein the cable modem has a lease time storage for storing a lease time of the IP address dynamically allocated to the subscriber terminal by the DHCP message, and clears the IP address stored in the IP address storage after the lease time has expired to make the subscriber terminal be in a state where the IP address is unallocated.

30 4. The cable modem system as claimed in claim 2 wherein the cable

5. The cable modem system as claimed in claim 1 wherein the cable modem has a release message detector for detecting a DHCP release message transmitted by the subscriber terminal in order to release the allocated IP address, and clears the IP address stored in the IP address storage when the DHCP release message is detected to make the subscriber terminal be in a state where the IP address is unallocated.

6. The cable modem system as claimed in claim 2 wherein the cable modem has a release message detector for detecting a DHCP release message transmitted by the subscriber terminal in order to release the allocated IP address, and clears the IP address stored in the IP address storage when the DHCP release message is detected to make the subscriber terminal be in a state where the IP address is unallocated.

7. The cable modem system as claimed in claim 1 wherein the cable modem has a subscriber terminal address notifying portion for notifying the cable modem termination system of the IP address allocated to the subscriber terminal, and

the cable modem termination system has an allocated address manager for storing the IP address notified by the cable modem corresponding to an address of the cable modem itself, and for renewing its storage and notifying the other cable modem to clear the stored IP address to make the subscriber terminal connected to the other cable modem be in a state where the IP address is unallocated when the address is already stored by a notification from another cable modem.

8. The cable modem system as claimed in claim 2 wherein the cable modem has a subscriber terminal address notifying portion for

notifying the cable modem termination system of the IP address allocated to the subscriber terminal, and

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5 corresponding to an address of the cable modem itself, and for renewing its storage and notifying the other cable modem to clear the stored IP address to make the subscriber terminal connected to the other cable modem be in a state where the IP address is unallocated when the address is already stored by a notification from another cable
10 modem.